

AMENDMENTS TO THE CLAIMS

1. (CURRENTLY AMENDED) An apparatus comprising:

a first bus segment configured (i) to transfer data in either a first direction or a second direction and (ii) to present a first bus busy signal configured to indicate whether said first bus segment has traffic;

a second bus segment configured (i) to transfer data in either said first direction or said second direction, and (ii) to present a second bus busy signal configured to indicate whether said second bus segment has traffic;

a first switch portion connected between said first bus segment and said second bus segment, wherein said first switch portion is configured (i) to receive said first bus busy signal, (ii) to receive data from said second bus segment and (iii) to transfer said data received from said second bus segment to said first bus segment when said first bus busy signal indicates said first bus segment has no traffic; and

a second switch portion connected between said first bus segment and said second bus segment, wherein said second switch portion is configured (i) to receive said second bus busy signal, (ii) to receive data from said first bus segment and (iii) to transfer said data received from said first bus segment to said second bus segment when said second bus busy signal indicates said

25 second bus segment has no traffic, wherein said first switch
portion and said second switch portion are ~~is~~ configured to
transfer data in both said first direction and said second
direction simultaneously.

2. (ORIGINAL) The apparatus according to claim 1,
wherein said first bus segment is connected to a first plurality of
components.

3. (ORIGINAL) The apparatus according to claim 2,
wherein said second bus segment is connected to a second plurality
of components.

4. (CURRENTLY AMENDED) The apparatus according to claim
1, wherein:

 said ~~switch comprises (i) a~~ first switch portion is
configured to transmit data ~~in said first direction to said first~~
bus segment when said first bus busy signal is in a first state and
hold data for transfer to said first bus segment when said first
bus busy signal is in a second state; and

said (ii) a second switch portion is configured to
transmit data ~~in said second direction to said second bus segment~~
when said second bus busy signal is in a first state and hold data

for transfer to said second bus segment when said second bus busy signal is in a second state.

5. (CURRENTLY AMENDED) The apparatus according to claim 4, wherein said first switch portion comprises a first plurality of memory cells and said second switch portion comprises a second plurality of memory cells.

6. (CURRENTLY AMENDED) The apparatus according to claim 1, wherein said first switch portion and said second switch portion are configured as ~~comprises~~ a cross switch.

7. (CURRENTLY AMENDED) The apparatus according to claim ~~4~~1, wherein said first switch portion comprises a first buffer and said second switch portion comprises a second buffer.

8. (ORIGINAL) The apparatus according to claim 1, wherein said first bus segment operates at a first frequency and said second bus segment operates at a second frequency.

9. (ORIGINAL) The apparatus according to claim 8, wherein said first frequency is equal to said second frequency.

10. (ORIGINAL) The apparatus according to claim 8, wherein said first frequency is greater than said second frequency.

11. (CURRENTLY AMENDED) The apparatus according to claim 1, wherein said first switch portion comprises a first control ~~portion~~ logic, a first buffer and a first switch and said second switch portion comprises a second control ~~portion configured to control accesses to said first and second bus segments~~ logic, a second buffer and a second switch, wherein said first control logic is configured to generate a first control signal in response to said first bus busy signal, said second control logic is configured to generate a second control signal in response to said second bus busy signal, said first switch is configured to connect an output of said first buffer to said first bus segment in response to said first control signal and said second switch is configured to connect an output of said second buffer to said second bus segment in response to said second control signal.

12. (CURRENTLY AMENDED) An apparatus comprising:

~~first~~ means for presenting a first bus busy signal configured to indicate whether transferring data in either a first direction or a second direction is being transferred on a first bus segment;

~~second~~ means for presenting a second bus busy signal
configured to indicate whether transferring data in either said
first direction or said second direction is being transferred on a
second bus segment;

10 means for transferring data from said second bus segment
to said first bus segment, wherein said means for transferring data
from said second bus segment is configured (i) to receive said
first bus busy signal, (ii) to receive said data from said second
bus segment, (iii) to hold said data received from said second bus
15 segment when said first bus busy signal indicates said first bus
segment has traffic and (iv) to transfer said data received from
said second bus segment to said first bus segment when said first
bus busy signal indicates said first bus segment has no traffic;
and

20 ~~third~~ means ~~coupled between~~ for transferring data from
said first and second bus segment to said second bus segment,
wherein said transferring means for transferring data in both said
first direction and said second direction from said first bus
segment is configured (i) to receive said second bus busy signal,
25 (ii) to receive said data from said first bus segment, (iii) to
hold said data received from said first bus segment when said
second bus busy signal indicates said second bus segment has
traffic and (iv) to transfer said data received from said first bus
segment to said second bus segment when said second bus busy signal

30 indicates said second bus segment has no traffic, wherein data can
be transferred simultaneously (i) from said first bus segment to
said second bus segment and (ii) from said second bus segment to
said first bus segment.

13. (CURRENTLY AMENDED) A method for transferring data
and/or addresses comprising the steps of:

5 (A) transferring data in either a first direction or a
second direction on a first bus segment and presenting a first bus
busy signal configured to indicate whether said first bus segment
has traffic;

10 (B) transferring data in either said first direction or
said second direction on a second bus segment and presenting a
second bus busy signal configured to indicate whether said second
bus segment has traffic;

15 (C) transferring data from said second bus segment to
said first bus segment by (i) receiving said first bus busy signal,
(ii) receiving said data from said second bus segment and (iii)
transferring said data received from said second bus segment to
said first bus segment when said first bus busy signal indicates
said first bus segment has no traffic; and

~~(ED) transferring said data and/or addresses on a switch~~
~~connected between~~ from said first bus segment ~~and to~~ said second
bus segment by (i) receiving said second bus busy signal, (ii)

20 receiving said data from said first bus segment and (iii)
transferring said data received from said first bus segment to said
second bus segment when said second bus busy signal indicates said
second bus segment has no traffic, wherein said ~~switch is~~
~~configured to transfer data~~ can be transferred in both ~~said first~~
~~direction and said second direction~~ directions simultaneously.

Please add the following new claims:

14. (NEW) The method according to claim 13, wherein said data comprises addresses.

15. (NEW) The method according to claim 13, wherein:

the step (C) further comprises holding said data received from said second bus segment when said first bus busy signal indicates said first bus segment has traffic; and

5 the step (D) further comprises holding said data received from said first bus segment when said second bus busy signal indicates said second bus segment has traffic.

16. (NEW) The method according to claim 15, wherein:

holding said data received from said second bus segment comprises storing said data received from said second bus segment in a first buffer; and

5 holding said data received from said first bus segment
comprises storing said data received from said first bus segment in
a second buffer.

17. (NEW) The method according to claim 16, wherein:

transferring said data received from said second bus
segment to said first bus segment comprises connecting an output of
said first buffer to said first bus segment in response to said
5 first bus busy signal; and

transferring said data received from said first bus
segment to said second bus segment comprises connecting an output
of said second buffer to said second bus segment in response to
said second bus busy signal.

18. (NEW) The method according to claim 17, wherein:

transferring said data received from said second bus
segment to said first bus segment further comprises generating a
first control signal in response to said first bus busy signal; and
5 transferring said data received from said first bus
segment to said second bus segment further comprises generating a
second control signal in response to said second bu busy signal.

19. (NEW) The method according to claim 18, wherein:

transferring said data received from said second bus segment to said first bus segment further comprises controlling a first switch connected between said first buffer and said first bus segment in response to said first control signal; and

transferring said data received from said first bus segment to said second bus segment further comprises controlling a second switch connected between said second buffer and said second bus segment in response to said second control signal.

20. (NEW) The method according to claim 19, wherein said first switch and said second switch comprise tri-state buffers.